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10/585,097	06/30/2006	Xavier Leroy	LEROY4	5768

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EXAMINER	
AVERY, JEREMIAH L	

ART UNIT	PAPER NUMBER
2431	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,097	LEROY ET AL.	
	Examiner	Art Unit	
	JEREMIAH AVERY	2431	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-17* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-17* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *(none were filed)* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

I. Claims 1-17 have been examined.

II. Responses to Applicant's remarks have been given.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/15/11 has been entered.

Response to Arguments

2. Applicant's arguments filed 07/15/11 have been fully considered but they are not persuasive. With respect to the Applicant's arguments pertaining to claim 1, the Examiner upholds that Bischof teaches the Applicant's claimed invention, as cited below.

3. With regards to the claim language of "having the system store an entire set of references which the program obtains means considered as licit, said licit reference being stored when introducing into the program said reference by a licit means and when this licit reference is not already stored", the Examiner upholds that within, column 6, lines 13-24, Bischof discloses this via "The binder then includes the appropriate code, according to the symbolic references, and substitutes the symbolic references with an appropriate object reference. This object reference then points to the beginning of the

location where the method resides. The Java environment uses a lazy binding approach." Also, the "Java library" within column 9, lines 44-62 provides sufficient support: "provides protection of system classes that reside in the Java library. An object reference received from the name resolution process is a pointer to the corresponding piece of code, which actually points to the beginning of a method description."

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 9-14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 6,658,573 to Bischof et al., hereinafter Bischof.

4. On page 4 of the Applicant's Specification, with regards to the terms "licit" and "illicit", it is stated that "the actual definition of what is a licit or illicit reference depends on the system, on the programming language and possibly on the context". Thus the claim language is open to a broad interpretation and is disclosed via the citations of the prior art below.

5. Regarding claim 1, Bischof teaches a method for controlling access to data handled by references in a system for executing programs, said programs including processes and tasks, wherein upon executing a program, the method comprises the following steps:

having the system store an entire set of references which the program obtains means considered as licit, said licit reference being stored when introducing into the program said reference by a licit means and when this licit reference is not already stored (column 6, lines 13-24 and 44-62, column 9, lines 39-54, "Java library", column 12, lines

52-63, "both segments are mapped into different areas of the address space" and column 13, lines 41-54).

before any operation intended to be forbidden in case said operation deals with values which are not licit references, having the system check that said values are among the licit references which have been stored for this program, and accepting the operation, responsive to said step of checking, when said checking determines said values are among the licit references, and rejecting the operation responsive to said step of checking, when said checking determines said values are not among the licit references (column 7, lines 36-67, "reject the invocation", "assign and/or check rights to the caller entity").

6. Regarding claim 2, Bischof teaches wherein the references are pointers (column 13, lines 6-25 and 41-54 and column 14, lines 46-59).

7. Regarding claim 3, Bischof teaches wherein the licit means for a program in order to obtain reference values comprise *at least one of* the following operations: reading a variable or a datum belonging to the system or to another program, writing into a variable or datum of said program by the system or by another program, receiving arguments upon calling a routine of said program by the system or by another program, utilization of the return value from the call by said program of a routine belonging to the system or to another program, having said program catch up a raised exception during execution of a routine belonging to the system or to another program, receiving by said program an interruption or a valuated signal (column 5, lines 61-67, column 6, lines 1-3 and 25-31 and column 7, lines 3-15).

8. Regarding claim 4, Bischof teaches wherein the system comprises a mechanism which determines whether a given value is a valid reference (column 7, lines 30-57, "If the guard object indicates no error, execution continues as usual").

9. Regarding claim 9, Bischof teaches wherein the whole of the licit stored references is represented by a table (column 13, lines 6-25).

10. Regarding claim 10, Bischof teaches wherein the set of the licit stored references is emptied, by means of a conservative garbage collector, of references which have become inactive (column 15, lines 4-11 and column 16, lines 1-9, "the garbage collection is responsible for removing obsolete objects and freeing up the memory").

11. Regarding claim 11, Bischof teaches wherein: the references are represented in the system by handles and tables of pointers, the sets of licit stored references are represented by vectors of bits associated with some of the tables of pointers, where a bit has a given index which represents the presence *or* the absence of the corresponding reference in said sets, said vectors of bits are represented by means of a sequence of indexes or lengths corresponding to the extents of bits positioned in the same way (column 13, lines 6-25 and 41-54 and column 14, lines 46-59).

12. Regarding claim 12, Bischof teaches wherein the references are handles (column 14, lines 38-59, "a pointer to the appropriate guard dispatch table is assigned to the executing thread").

> [According to page 3 of the Applicant's Specification, "A handle is an index in a table of pointers (and more generally in a table of references). The values of pointers and handles also sometimes include specific bits which

give information on the datum (for example on the referenced memory area or on the information therein) or, in the case of handles, on the associated table." Thus, the claimed "handles" are interpreted by the Examiner to pertain to Bischof's disclosure of a "guard dispatch table" and the associations related therein.]

13. Regarding claim 13, Bischof teaches wherein the stored licit references are limited to the sole references on data considered as sensitive for the system (column 6, lines 13-24 and 44-62, column 9, lines 55-67).

14. Regarding claim 14, Bischof teaches wherein said checks check that the values are among the sensitive licit references which were stored for this program or else which are references determined as valid and dealing with data which are not sensitive (column 7, lines 36-67, "reject the invocation", "assign and/or check rights to the caller entity" and "perform a notification and/or auditing service").

15. Regarding claim 17, Bischof teaches wherein some of said tables are reserved for licit references (column 14, lines 46-59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bischof and further in view of United States Patent No. 7,127,605 to Montgomery et al., hereinafter Montgomery.

17. Bischof teaches the claimed invention, as cited within independent claim 1. However, Bischof does not teach the claim features of dependent claims 5 and 6 pertaining to the functionality of the firewall. Montgomery teaches said features, as cited below.

18. Regarding claim 5, Montgomery teaches wherein the system comprises a firewall which forbids certain operations by certain programs on certain referenced data, data considered as being sensitive for the system being those for which the operations are not forbidden by the firewall (column 3, lines 43-62, "the SIO 206 still cannot access 216

methods in the client applet 100; such access is still prevented by the firewall 106" and column 4, lines 21-66, "server applet 102 is still prohibited from accessing 310 the client applet 100 due to firewall 106").

19. Regarding claim 6, Montgomery teaches wherein the firewall forbids certain operations by a program on data belonging to other programs, except on those declared as shareable (column 3, lines 43-62, "the SIO 206 still cannot access 216 methods in the client applet 100; such access is still prevented by the firewall 106" and column 4, lines 21-66, "server applet 102 is still prohibited from accessing 310 the client applet 100 due to firewall 106").

20. The motivation to combine would be to have "the applications being able to share methods in a secure manner using delegates to enforce the security policy that each application wishes to impose with regard to each method shared" (*Montgomery* – column 2, lines 47-54).

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Montgomery with the teachings of Bischof so that "the client applet 100 and the server applet 102 may freely communicate with the JCRE 108, but the client applet 100 is prevented from referencing 110 the server applet 102 by the firewall 106 to ensure security" (*Montgomery* – column 3, lines 38-42).

22. Claims 7, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bischof and Montgomery, and further in view of United States Patent No. 7,140,549 to de Jong, hereinafter de Jong.

23. Though Bischof teaches the claimed invention as cited within independent claim 1, it does not teach the claimed features within claims 7 and 8 pertaining to "Javacard.framework.Shareable". Montgomery and de Jong teach said features, as cited below.

24. Regarding claim 7, Montgomery teaches wherein the system is based on a Java Card virtual machine and wherein:

the data declared as shareable and therefore sensitive, are objects which are instances of classes which implement the "Javacard.framework.Shareable" interface (Figures 1-2d, 3a and 3b, column 3, lines 31-60 and column 6, lines 32-62, "JCSystem.getAppletSharableInterfaceObject").

25. Further, for claim 7, Montgomery teaches some of the claimed features, as cited above but does not teach the features pertaining to "a program consists of the whole of the code which is found in a 'Java Card package'; the firewall is that of the Java Card Runtime Environment (JCRE)". Thus, de Jong is cited to teach these claimed features.

26. Regarding claim 7, de Jong teaches a program consists of the whole of the code which is found in a "Java Card package"; the firewall is that of the Java Card Runtime Environment (JCRE) (Figure 3 and column 8, lines 21-31 and 38-49).

27. The motivation to combine would be " for having two or more applets within a single firewall is where one applet manages the code and classes of the other applications(s) that are within the same firewall" (*de Jong* – column 8, lines 26-29).

28. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of de Jong with the teachings

of Montgomery and Bischof due to "it is clearly important to determine the correct firewall for the applet, so that the applet is installed into the proper location" (*de Jong* – column 8, lines 46-49).

29. Regarding claim 8, Montgomery teaches wherein the system stores in sets of sensitive licit references associated with a package all the references which appear in the following cases: receiving arguments of "Javacard.framework.Shareable" type when a method of said package is called by another package or by the system, "Javacard.framework.Shareable" type return value when said package calls a method from another package or from the system (including the a "getAppletSharreableInterfaceObject" method of "Javacard.framework.JCSystem package"), reading a public static field of "Javacard.framework.Shareable" type in another package or in the system, catching up an instance object of a class from (inheriting from) "java.lang.Throwable" and implementing "Javacard.framework.Shareable" (Figures 1-2d, 3a and 3b, column 3, lines 31-60 and column 6, lines 32-62, "JCSystem.getAppletSharableInterfaceObject").

30. The motivation to combine would be to have a repository containing the means for accessing the desired software application/program.

31. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Montgomery with Bischof so that "instead of granting a client application access to an interface of the server application, the client is given access to a delegate object. The delegate object controls

access to the shared methods of the server application by enforcing a security policy, using security mechanisms" (*Montgomery* – column 4, lines 7-11).

32. Bischof teaches the claimed invention, as cited within independent claim 1 but does not teach the claimed features within dependent claim 15 pertaining to the types of objects within the system. Montgomery teaches said features, as cited below.

33. Regarding claim 15, Montgomery teaches wherein the data declared as shareable and therefore sensitive, are objects with public use of the system: global arrays and Entry Point Objects of JCRE (column 3, lines 43-60, "the server applet 102 responds by returning 208 to the JCRE 108 a reference to a shareable interface object (SIO) 206 if access is granted to the client, or null if access is not granted").

34. The motivation to combine would be to have "the applications being able to share methods in a secure manner using delegates to enforce the security policy that each application wishes to impose with regard to each method shared" (*Montgomery* – column 2, lines 47-54).

35. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Montgomery with the teachings of Bischof so that "the client applet 100 and the server applet 102 may freely communicate with the JCRE 108, but the client applet 100 is prevented from referencing 110 the server applet 102 by the firewall 106 to ensure security" (*Montgomery* – column 3, lines 38-42).

36. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bischof as applied to claim 11 above, and further in view of United States Patent No. 7,140,549 to de Jong, hereinafter de Jong.

37. With regards to claim 16, though Bischof teaches the claimed invention, as cited above, Bischof does not teach the claim language found within claim 16 pertaining to "said vectors of bits are hollow". de Jong teaches said claim language, as cited below.

38. Regarding claim 16, de Jong teaches wherein said vectors of bits are hollow (column 17, lines 26-34, "the appropriate number of null bytes").

39. The motivation to combine would be that in the event that "most of the bytes in the AID parameter passed from the terminal to the card are zero, they can be truncated to fit the parameter into the AID byte array" (*de Jong* - column 17, lines 40-43).

40. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of de Jong with the teachings of Bischof in order that objects "are only instantiated if particularly required, thereby saving storage on the card" (*de Jong* - column 11, lines 26-29).

Conclusion

41. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

42. The following United States Patents and Patent Application Publications are further cited to show the state of the art with respect to data access, such as:

United States Patent Application Publication No. US 2003/0120593 to Bansal et al., which is cited to show a method and system for delivering multiple services electronically to customers via a centralized portal.

United States Patent Application Publication No. US 2005/0044197 to Lai, which is cited to show a structured methodology and design patterns for web services.

United States Patent No. 6,633,984 to Susser et al., which is cited to show techniques for permitting access across a context barrier on a small footprint device using an entry point object.

United States Patent No. 6,151,688 to Wipfel et al., which is cited to show resource management in a clustered computer system.

United States Patent No. 7,117,284 to Watt et al., which is cited to show vectored interrupt control within a system having a secure domain and a non-secure domain.

United States Patent No. 7,149,862 to Tune et al., which is cited to show access control in a data processing apparatus.

United States Patent No. 7,171,539 to Mansell et al., which is cited to show an apparatus and method for controlling access to a memory.

United States Patent No. 7,305,534 to Watt et al., which is cited to show control of access to a memory by a device.

United States Patent No. 6,807,636 to Hartman et al., which is cited to show methods and apparatus for facilitating security in a network.

United States Patent No. 6,560,774 to Gordon et al., which is cited to show a verifier to check intermediate language.

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEREMIAH AVERY whose telephone number is (571)272-8627. The examiner can normally be reached on Monday thru Friday 8:30am-5pm.

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

45. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeremiah Avery/
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